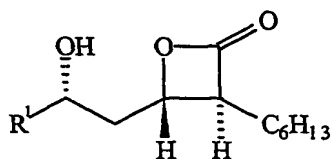


We claim:

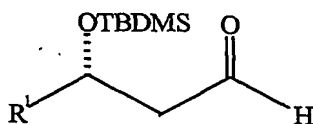
1. A process for preparing oxetan-2-one of Formula I,



FORMULA I

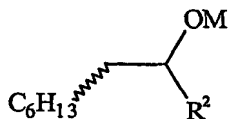
comprising the steps of:

- a. reacting an aldehyde of Formula II



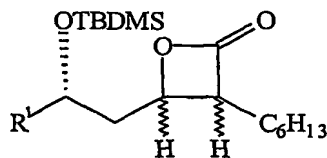
FORMULA II

with a metal enolate of Formula III



FORMULA III

to give a diastereomeric mixture of trans-oxetan-2-one of Formula IV



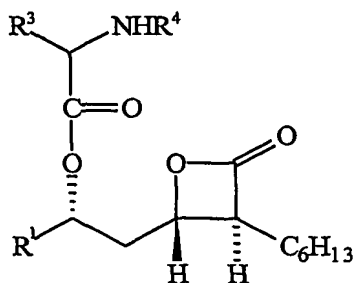
FORMULA IV (SSS+SRR)

- b. hydrolyzing the diastereomeric mixture of trans-oxetan-2-one of Formula IV to form the compound of Formula I; and
- c. separating of diastereomerically pure oxetan-2-ones of Formula I by crystallization,

wherein R<sup>1</sup> is undecyl or 2Z,5Z-undecadienyl and R<sup>2</sup> is selected from the group consisting of F, substituted or unsubstituted aryloxy, arylsulfanyl and heteroaryl, and M is selected from the group consisting of a monovalent metal, a divalent metal, a trivalent metal and a tetravalent metal.

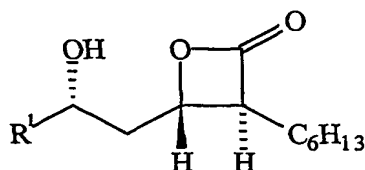
2. The process of claim 1, wherein R<sup>2</sup> is phenoxy or 1-benzotriazolyl and M is lithium, MgBr, ZnCl or Ti(OR)<sub>3</sub> wherein R is alkyl.
3. The process of claim 1, wherein the reaction of the aldehyde of Formula II with the metal enolate of Formula III is performed in an inert organic solvent.
4. The process of claim 3, wherein the inert organic solvent is selected from the group consisting of diethyl ether, dibutyl ether, methyl tert-butyl ether, dioxane and tetrahydrofuran (THF).
5. The process of claim 1, wherein the reaction of the aldehyde of Formula II with the metal enolate of Formula III is carried out at a temperature of from about -120 °C to about -70 °C.
6. The process of claim 5, wherein the temperature is from about -100 °C to about -80 °C.
7. The process of claim 1, wherein the reaction of the aldehyde of Formula II with the metal enolate of Formula III is quenched by addition of an acid or a salt solution and the compound of Formula IV is recovered by extraction.
8. The process of claim 7, wherein the acid is hydrochloric acid and the salt solution is ammonium chloride.
9. The process of claim 1, wherein the hydrolysis of the diastereomeric trans-oxetan-2-one of Formula IV is carried out in the presence of an acidic catalyst and a polar solvent.
10. The process of claim 9, wherein the acidic catalyst is selected from the group consisting of an acid, a salt of a weak base, an acidic ion-exchange resin and acidic silica gel.
11. The process of claim 10, wherein the acid is hydrofluoric acid or hydrochloric acid.
12. The process of claim 10, wherein the salt of a weak base is ammonium fluoride or pyridinium-4-toluenesulphonate.

13. The process of claim 9, wherein the polar solvent is selected from the group consisting of an alcohol, a cyclic ether, a nitrile, a dipolar aprotic solvent, an ester, and a mixture thereof.
14. The process of claim 13, wherein the alcohol is methanol, ethanol or isopropanol.
15. The process of claim 13, wherein the cyclic ether is dioxane or tetrahydrofuran (THF).
16. The process of claim 13, wherein the nitrile is acetonitrile.
17. The process of claim 13, wherein the dipolar aprotic solvent is dimethylformamide, dimethyl sulfoxide, sulfolane or N-methylpyrrolidone.
18. The process of claim 13, wherein the ester is ethyl acetate or isopropyl acetate.
19. The process of claim 1, wherein the hydrolysis of the compound of Formula IV is carried out at a temperature from about -20 °C to about 120 °C.
20. The process of claim 19, wherein the temperature is from about 0 °C to about 60 °C.
21. The process of claim 1, wherein the diastereomerically pure oxetan-2-ones of Formula I are separated by crystallization from an aliphatic hydrocarbon solvent.
22. The process of claim 21, wherein the aliphatic hydrocarbon solvent is selected from the group consisting of hexane, pentane, heptane, cyclohexane, and mixtures thereof.
23. The process of claim 1, wherein the diastereomerically pure oxetan-2-ones of Formula I are separated by crystallization from a mixture of an aliphatic hydrocarbon solvent and at least one of an aromatic hydrocarbon, an ether, a chlorinated hydrocarbon, an ester, a ketone.
24. The process of claim 23, wherein the aromatic hydrocarbon is toluene or xylene; the ether is diisopropyl ether, dibutyl ether, diethyl ether, methyl tert-butyl ether, dioxane or tetrahydrofuran; the chlorinated hydrocarbon is methylenedichloride or ethylenedichloride; the ester is ethyl acetate or isopropyl acetate; and the ketone is acetone or methylisobutylketone.
25. A process for preparing a compound of Formula V

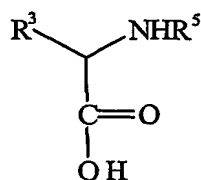
**FORMULA V**

comprising the steps of:

- a. treating an oxetan-2-one of Formula I

**FORMULA I**

with an acid or acid anhydride of Formula VI

**FORMULA VI**

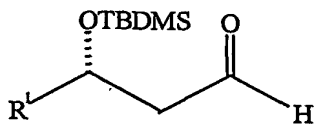
or a mixed anhydride thereof, and dicyclohexylcarbodiimide;

- b. cleaving off R<sup>5</sup>; and  
c. reacting with an alkanoylating agent having an R<sup>4</sup> group to introduce the group R<sup>4</sup>,

wherein R<sup>1</sup> undecyl or 2Z,5Z-undecadienyl, R<sup>3</sup> is isobutyl or carbamoylmethyl, R<sup>4</sup> is formyl or acetyl, and R<sup>5</sup> is an amino protecting group.

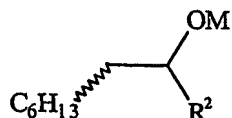
26. The process of claim 25, wherein R<sup>5</sup> is benzyloxycarbonyl or p-nitrobenzyloxycarbonyl.

27. The process of claim 25, wherein the alkanoylating agent is an acid anhydride of  $R^4$ -COOH or  $R^4X$  wherein X is a halide.
28. The process of claim 29, wherein the alkanoylating agent is formic acid anhydride, acetic anhydride, formyl halide or acetyl halide.
29. The process of claim 25, wherein the treatment of oxetan-2-one of Formula I with the acid of Formula VI is performed in a solvent selected from the group consisting of a hydrocarbon, a chlorinated hydrocarbon, an ether, an ester, a dipolar aprotic solvent, and a mixtures thereof.
30. The process of claim 29, wherein the hydrocarbon is hexane, cyclohexane, toluene, or xylene; the chlorinated hydrocarbon is methylenedichloride or ethylenedichloride; the ether is diethyl ether, methyl tert-butyl ether, dioxane or tetrahydrofuran; the ester is ethyl acetate or isopropyl acetate; and the dipolar aprotic solvent is dimethylformamide or dimethylacetamide.
31. The process of claim 25, wherein the treatment of oxetan-2-one of Formula I with the acid of Formula VI is performed in the presence of dimethylaminopyridine.
32. The process of claim 25, wherein the treatment of oxetan-2-one of Formula I with the acid of Formula VI is performed at a temperature from about -20 °C to about 40 °C.
33. The process of claim 25, wherein the  $R^5$  is cleaved by hydrogenation in the presence of a hydrogenation catalyst and a solvent at a temperature from about 10 °C to about 75 °C.
34. A compound prepared by a process comprising the steps of:
  - a. reacting an aldehyde of Formula II

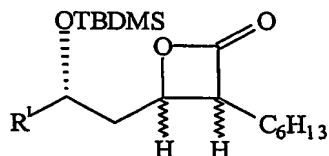


FORMULA II

with a metal enolate of Formula III

**FORMULA III**

to give a diastereomeric mixture of trans-oxetan-2-one of Formula IV

**FORMULA IV (SSS+SRR)**

- b. hydrolyzing the diastereomeric mixture of trans-oxetan-2-one of Formula IV to form the compound of Formula I; and
- c. separating of diastereomerically pure oxetan-2-ones of Formula I by crystallization,

wherein R<sup>1</sup> is undecyl or 2Z,5Z-undecadienyl and R<sup>2</sup> is selected from the group consisting of F, substituted or unsubstituted aryloxy, arylsulfanyl and heteroaryl, and M is selected from the group consisting of a monovalent metal, a divalent metal, a trivalent metal and a tetravalent metal.